Airport Surface Surveillance: An Alternate Approach

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Introduction

- Surface Surveillance Today
- The Problem
- Service Model Approach
- Levels of Service and Maintenance Support
- Benefits
- Challenges

The Current Surveillance Picture

- FAA tasked to provide safe and efficient operations within the National Airspace System (NAS)
- Airport surface movement area is a critical component
- Systems in use today utilize comprehensive surface surveillance:

ASDE-3/AMASS

ASDE-X

The Problem

- 488 towered airports in the NAS
- 59 airports have or are slated to receive comprehensive surface surveillance systems
- Many of the "beyond 59" airports have significant needs that are not being met

Difficulties with Today's Model

- Available systems are complex
- High initial acquisition costs
- Reliability and availability requirements further increase costs
- FAA or sole-source maintenance/repairs

- Smaller airports do not pass the cost-benefit equation to justify acquisition of the systems that are currently available

A different approach is needed

Service Model Approach

- Commercial world has adopted the use of "service providers" successfully in many areas:
  - Internet service
  - Telephone
    - Long distance carriers
    - Cellular providers
  - Information Technology
- Competition between providers ensures responsiveness to customers
- Service can be independent of hardware:
  - Not bound to any single technology
  - Flexibility to upgrade as technology advances

Surveillance Service Provider

- Provide airport surface surveillance as a service, rather than as an acquired product
- Could have a pool of providers to select from
- Different airports have different needs - one size does *not* fit all.
- Service needs can span range:
  - Operational/control decision making
  - Visibility augmentation

Levels of Service

- Operational/control decisions demand:
  - High accuracy
  - System redundancy
  - High operational availability and reliability
- Visibility augmentation has lower demands:
  - Presence detection with lower positional accuracy
  - Single-unit system
  - Not used for control decisions
  - Advisory/supplementary in nature

Selection Process

- FAA defines levels of surveillance service and requirements associated with each level
- Vendor applies a specific system to be tested at a given level
- System run through evaluation and certification process
- Qualified systems are added to provider catalog (similar to Advisory Circular approach)
- Airports are empowered to choose and enabled to have surveillance of desired level

System Maintenance Support

- Current systems are supported by the FAA or sole-source contracts
- Service model allows for more flexible approach
- Various levels of maintenance support could be made available:
  - Full-time contractor-supplied maintenance technician
  - On-call contractor technician
  - On-site sparing with local technician training
  - Phone support from service provider

Maintenance Support Benefits

- Current FAA budgeting method calculates 20-year lifecycle costs of system. This can include:
  - General maintenance costs
  - Maintenance technician training
  - FAA parts depot
  - Engineering test platform and/or facilities
- Many systems fail cost-benefit analysis immediately
- Off-loading maintenance to service provider can:
  - Decrease/remove this load
  - Lower overall maintenance calculations
  - Improve chances of positive cost-benefit analysis

Other Benefits

- As opposed to 20-year lifecycle, airports could contract for shorter periods
- Service providers could defer initial capital expenses by amortizing costs into contract life span:
  - Lower initial outlay by airport
  - Leveled costs over contract life
- Shorter contract periods also allow providers natural opportunities for hardware/technology updates

Challenges

- Any potential system must meet needs of the airport while providing a safety benefit
- Must pay close attention to system requirements development:
  - Possible to let requirements overrun intended airport audience
  - Need to control cost escalation from "should" requirements
- Vendors must:
  - Demonstrate ability of system to perform at desired level
  - Realize system is used for safety-critical applications
  - Provide service and maintenance to meet FAA's safety standards

Conclusion

- Current surveillance systems are not available to "beyond-59" airports
- Taking a service provider approach may:
  - Allow for different levels of surveillance
  - Off-load maintenance costs
  - Increase likelihood of a system passing the cost-benefit analysis
    - ⇨ Provide airports the opportunity for surface surveillance where they currently have none
- In today's budget environment, the FAA should be open to pursuit of novel solutions and practices

Discussion/Questions?

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